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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/965,555	09/27/2001	Michele J. Berry	884.548US1	3865

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EXAMINER

THAI, LUAN C

ART UNIT PAPER NUMBER

2827

DATE MAILED: 07/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/965,555

Applicant(s)

BERRY, MICHELE J.

Examiner

Luan Thai

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL.
- 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 and 6-13 is/are rejected.
- 7) ☒ Claim(s) 2-5 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.

- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Election/Restriction

Applicant's election without traverse of group II, claims 1-13 in Paper No. 3 filed April 29, 2002 is acknowledged.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
2. Claims 1, 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto (5,943,217) in view of Capote et al (6,297,560).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims 1, 7 and 9, Hashimoto teaches (Col. 5, lines 23+, Col. 11, lines 23+) a method for use in assembling a semiconductor circuit package comprising: providing a package substrate 2; applying a flux material 19 to a surface of the package substrate 2; attaching leads 7, which are considered as the claimed pins, to the package substrate by using the bonding tool 13, which is considered as the claimed jig, through the flux material 19, by a solder reflow 11. Although Hashimoto does not explicitly teach the step of allowing the flux

material 19 to cure, this feature is taken to be inherent for the flux material 19 in Hashimoto's device. Hashimoto does not teach the flux material being a polymer material.

A polymer flux, however, is conventionally used in the art as disclosed by Capote et al (Col. 7, lines 31+). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the well known polymer flux, as taught by Capote et al, to Hashimoto's structure, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

3. Claims 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto (5,943,217) in view of Capote et al (6,297,560) and further in view of Variot et al (6,088,914).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claim 6, the proposed process of Hashimoto and Variot et al discloses all the limitations of the claimed invention as detailed above except for the polymer flux material including screen-printing the material on the surface of the substrate.

Variot et al teach a flux material may be screen-printed on the surface of a substrate (Col. 5, lines 42+). It would have been obvious to one of ordinary skill

in the art at the time the invention was made to apply screen-printed process step to the proposed process of Hashimoto and Variot et al to form the polymer flux material on the substrate since such process step is conventionally applied in the art as taught by Variot.

Regarding claim 8, since the polymer flux material can be screen printed on the surface of the substrate, the flux material inherently includes a no flow material.

4. Claims 10 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bronson et al (5,288,944).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims 10 and 12-13, Bronson et al disclose steps of fabrication of a semiconductor device package (Col. 8, lines 11+) comprising: providing a package substrate 120 having a plurality of contact pads 140 on a surface thereof; attaching pins 170 to contact pads by solder reflow 190; applying an encapsulation material 200 about the solder joints associated with the pins. Bronson et al do not explicitly disclose the encapsulation material to maintain a location of the pins on the package substrate during subsequent high temperature processing.

Although Bronson et al do not explicitly teach the encapsulation material to maintain a location of the pins on the package substrate during subsequent

high temperature processing, a process step of testing the device at a certain temperature can be performed and it would be obvious for the encapsulation material to maintain a location of the pins on the package substrate during the high temperature testing step.

5. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bronson et al (5,288,944) in view of Iyogi et al (4,8335,344).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claim 11, the proposed process of Bronson et al discloses all the limitations of the claimed invention as detailed above except for a fig to be used for attaching pins to the contact pads on the substrate.

Iyogi et al while related to a similar method of attaching pins to a substrate teach (Col. 5, lines 50+) the steps of holding pins in a jig, applying solder paste to the lower end face of pins, aligning the jig with the package substrate, applying pressure to the jig at a temperature that equals or exceeds a melting temperature of the solder paste. It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the method steps as taught by Iyogi et al to Bronson et al's process in order to attach pins to the contact pads on the substrate.

Allowable Subject Matter

6. Claims 2-5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.


7. The following is an examiner's statement of reasons for allowance: the prior art taken either singly or in combination fails to anticipate or fairly suggest a step of attaching pins including placing solder elements in the polymer material in desired pin locations which the Applicant claims in claim 2 in a manner which would warrant a rejection under 35 U.S.C. § 102 or 35 U.S.C. § 103.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luan Thai whose telephone number is (703) 308-1211. The examiner can normally be reached on 7:00 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on (703) 305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Luan Thai
July 15, 2002


DAVID L. TALBOTT
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